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The National Imagery Transmission Format (NITF) Metadata Path: *From File to Metadata Catalog (MDC)*

Introduction

The DCGS Integration Backbone (DIB) presents the tactical user with a metacard, stored in the DIB MDC, which uses metadata to describe a data asset stored in an Image Product Library (IPL). The metacard contains information about a NITF file, which is one type of data asset stored in an IPL. We use the NITF file and illustrate its journey to discovery through the DIB MDC. The DIB MDC metadata used to describe a NITF file takes a semantically equivalent, multi-standard, multi-transformation journey from the original NITF file to the metadata elements presented in the DIB metacard. Since semantic mappings and data format transformations can alter the meaning and accuracy of the original data, minimizing the effects of these functions simplifies the metadata journey and minimizes actions that may impact the integrity of the data. This article follows NITF metadata as it makes its way from the original NITF file through the IPL and IPL DIB Adapter Service (DAS) to the DIB metacard.

NITF File

A NITF file formatted in accordance with the *National Imagery Transmission Format Standard (NITFS)*, MIL-STD 2500A-C¹, STDI-0001, or 0002, or 0006, and guided by the *Implementation Practices of NITF* (IPON,

STDI-0005),² contains structured metadata associated with the NITF file. MIL-STD 2500A-C governs population of the file header and sub-header metadata while the STDI-0001, 0002, and 0006 govern the controlled extensions that can be added to the NITF files. The IPON documents NITF community practices used to implement the NITF Standards.

The NITF Metadata Path From
File to DIB Metadata Catalog

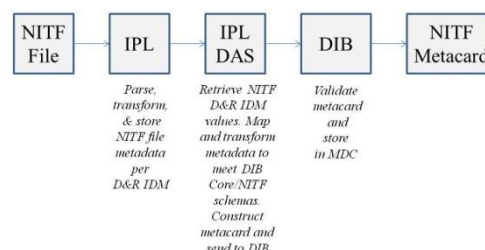


Figure 1. NITF Metadata Path

IPL

The IPL ingests a NITF file, parses the metadata, and stores the metadata in accordance with the National Geospatial-Intelligence Agency (NGA) Discovery & Retrieval Interface Data Model (D&R IDM).³ NITF metadata element alignment with the D&R IDM Entities and Attributes is governed by a semantic mapping that is part of the D&R IDM documentation package. This mapping may include a data transformation by



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concatenation of NITF elements or conversion of the data format to meet the requirements of the D&R IDM. Use of the D&R IDM allows the storage of multiple types of products that can be mapped to the single data model. The D&R IDM is updated yearly to accommodate changes to the data sets stored in the libraries.

IPL DIB Adapter Service

The IPL to DIB metacard portion of the metadata journey is facilitated by the IPL DIB Adapter Service (DAS). The DAS is a separate software component distributed by NGA with IPL v.6.5.3 and later. The DAS is a resource adapter that collects a subset of the parsed NITF file metadata stored in the IPL, constructs a metacard, and sends it to the DIB MDC. The DAS performs the semantic mappings and data transformations required to meet the DIB data requirements for the metacard.

DIB Metadata Catalog

The DIB validates the metacard against the DOD Discovery Metadata Specification (DDMS)⁴ and DIB-specific NITF schemas, and ingests the metacard into the MDC. The NITF file remains in the IPL and a URL link to that file is included in the data provided by the DAS.

Conclusion

The metadata journey from NITF data asset to DIB metacard includes several semantic mappings and transformations along the path to meet existing standards and system

requirements. A clear understanding of the metadata path and the mappings and transformations that affect the original NITF metadata is required to ensure tactical users are presented with an accurate description of the data asset in the resulting metacard. A quality metacard requires a careful analysis of the metadata path and the semantic mappings and transformations that take place during that journey.

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¹ MIL-STD 2500A-C,
National Imagery Transmission Format Standard
(NITFS), NGA (NTB), 1994-present.

² STDI-series, NITFS, NGA (NTB), 1998-present.

³ *D&R IDM, Discovery and Retrieval Interface Data Model*, NGA, 2001-present.

⁴ *DDMS, DOD Discovery Metadata Specification*, ASD(NII), 2003-present.